

WHAT IS CLAIMED IS:

1. A semiconductor wafer comprising:

a semiconductor substrate having a plurality of integrated circuits and electrical interconnections electrically connected to each of the integrated circuits, the semiconductor substrate includes bonding pads formed on a surface of the semiconductor substrate, each of the bonding pads being part of a corresponding electrical interconnection;

first resin layers, each being disposed on each of a plurality of areas on the semiconductor substrate and having ridged edges;

wirings, each being disposed over a corresponding bonding pad and a corresponding first resin layer and being electrically connected to the corresponding bonding pad; and

external connection terminals, each being disposed on a corresponding wiring and being electrically connected to the corresponding wiring.

2. The semiconductor wafer according to claim 1, wherein each of the wirings extends over a corresponding ridged edge.

3. The semiconductor wafer according to claim 2, wherein at least a part of each of the external connection terminals is disposed above the corresponding ridged edge.

4. A semiconductor device comprising:

a semiconductor chip having an integrated circuit and electrical interconnections electrically connected to the integrated circuit, the semiconductor chip including bonding pads formed on a surface of the semiconductor chip, each of the bonding pads being part of a corresponding electrical interconnection;

a first resin layer disposed on the semiconductor chip and having ridged edges;

wirings, each being disposed over a corresponding bonding pad and the first resin layer and being electrically connected to the corresponding bonding pad; and

external connection terminals, each being disposed on a corresponding wiring and being electrically connected to the corresponding wiring.

5. The semiconductor device according to claim 4, wherein each of the wirings extends over a corresponding ridged edge.

6. The semiconductor device according to claim 4, wherein at least a part of each of the external connection terminals is disposed above a corresponding ridged edge.

7. A circuit board on which the semiconductor device according to claim 4 is mounted.

8. An electronic apparatus including the semiconductor device

according to claim 4.

9. A method for manufacturing a semiconductor device comprising:  
forming a resin precursor layer on a semiconductor substrate having an integrated circuit and electrical interconnections electrically connected to the integrated circuit, the semiconductor substrate including bonding pads formed on a surface of the semiconductor substrate, each of the bonding pads being part of a corresponding electrical interconnection;

forming a first resin layer having ridged edges, the first resin layer being formed by curing shrinkage;

forming wirings, each being disposed over a corresponding bonding pad and the first resin layer and being electrically connected to the corresponding bonding pad; and

forming external connection terminals, each being disposed on a corresponding wiring and being electrically connected to the corresponding wiring.

10. The method for manufacturing a semiconductor device according to claim 9, further comprising extending each of the wirings over a corresponding ridged edge.

11. The method for manufacturing a semiconductor device according to claim 9, further comprising forming at least a part of each of the external connection terminals above a corresponding ridged edge.

12. The method for manufacturing a semiconductor device according to claim 9, further comprising subjecting the resin precursor layer to curing shrinkage by heating.

13. The semiconductor wafer according to claim 1, wherein at least a part of each of the external connection terminals is disposed above a corresponding ridged edge.

14. The semiconductor device according to claim 5, wherein at least a part of each of the external connection terminals is disposed above the corresponding ridged edge.

15. A circuit board on which the semiconductor device according to claim 5 is mounted.

16. A circuit board on which the semiconductor device according to claim 6 is mounted.

17. An electronic apparatus including the semiconductor device according to claim 5.

18. An electronic apparatus including the semiconductor device according to claim 6.

19. The method for manufacturing a semiconductor device according to claim 10, further comprising forming at least a part of each of the external connection terminals above the corresponding ridged edge.

20. The method for manufacturing a semiconductor device according to claim 10, further comprising subjecting the resin precursor layer to curing shrinkage by heating